

IN THE CLAIMS

1. (Currently Amended) A data-modulating apparatus for modulating data having a basic data length of m bits, to a variable-length code $(d, k; m, n: r)$ having a basic code length of n bits, said apparatus comprising:

means for receiving a train of codes; and

sync signal adding means for adding a sync signal to [[a]] said train of codes after adding a minimum run, said sync signal having a pattern that breaks a maximum run, wherein said pattern is repeated twice continuously.

2. (Canceled)

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3. (Original) The data-modulating apparatus according to claim 1, characterized in that the sync signal has two or more patterns that can be distinguished from one another.

4. (Original) The data-modulating apparatus according to claim 1, characterized in that the sync signal having two or more patterns is selected such that a detection distance of 2 or more is provided between the two or more patterns.

5. (Original) The data-modulating apparatus according to claim 1, characterized in that a DC-free pattern is selected for the sync signal having two or more patterns.

6. (Original) The data-modulating apparatus according to claim 1, characterized in that two sync signals having two or more patterns each are given as a set and are interchangeably selected to achieve DSV control.

7. (Currently Amended) A data-modulating method of modulating data having a basic data length of m hits, to a variable-length code (d, k; m, n: r) having a basic code length of n hits, said method including the ~~step~~ steps of:

receiving a train of codes; and

adding a sync signal to [[a]] said train of codes after ~~adding~~ a minimum run, said sync signal having a pattern that breaks a maximum run, wherein said pattern is repeated twice continuously.

8. (Currently Amended) A data-providing medium for providing a data-modulating apparatus with a computer-readable program, said apparatus designed to modulate data having a basic data length of m bits, to a variable-length code (d, k; m, n: r) having a basic code length of n bits, said program designed to cause said apparatus to perform a process including the ~~step of~~ steps of receiving a train of codes adding a sync signal to [[a]] said train of codes after ~~adding~~ a minimum run, said sync signal having a pattern that breaks a maximum run, wherein said pattern is repeated twice continuously.

9. (Currently Amended) A data-demodulating apparatus for demodulating a variable-length code (d, k ; m, n : r) having a basic code length of n bits to data having a basic data length of m bits to a. said apparatus comprising:

receiving means for receiving a train of codes; and

sync signal detecting means for detecting, from [[a]] said train of codes, a sync signal having a pattern that breaks a maximum run, after detecting a minimum run, wherein said pattern is repeated twice continuously.

10. (Currently Amended) A data-demodulating method of demodulating a variable-length code (d, k; m, n: r) having a basic code length of bits to data having a basic data length of m bits, said method including the ~~step~~ steps of:

receiving a train of codes

detecting from [[a]] said train of codes, a sync signal having a pattern that breaks a maximum run, after detecting a minimum run, wherein said pattern is repeated twice continuously.

11. (Currently Amended) A data-providing medium for providing a data-demodulating apparatus with a computer-readable program, said apparatus designed to demodulate a variable length code (d, k; m, n: r) having a basic code length of n bits to data having a basic data length of m bits, said program designed to cause said apparatus to perform a process including the ~~step of~~ receiving a train of codes and detecting, from [[a]] said train of codes, a sync signal having a pattern that breaks a maximum run, after detecting a minimum run, wherein said pattern is repeated twice continuously.

12. (New) A data-modulating apparatus for modulating data having a basic data length of m bits, to a variable-length code $(d, k; m, n: r)$ having a basic code length of n bits, said apparatus comprising:

means for receiving a train of codes; and

sync signal adding means for adding a sync signal to said train of codes after a minimum run, said sync signal having a pattern that breaks a maximum run and six channel bits for identifying each sync signal.

13. (New) A data-modulating method of modulating data having a basic data length of m hits, to a variable-length code $(d, k; m, n: r)$ having a basic code length of n hits, said method including the steps of:

receiving a train of codes; and

adding a sync signal to said train of codes after a minimum run, said sync signal having a pattern that breaks a maximum run and six channel bits for identifying each sync signal.

14. (New) A data-providing medium for providing a data-modulating apparatus with a computer-readable program, said apparatus designed to modulate data having a basic data length of m bits, to a variable-length code $(d, k; m, n: r)$ having a basic code length of n bits, said program designed to cause said apparatus to perform a process including the steps of receiving a train of codes and adding a sync signal to said train of codes after a minimum run, said sync signal having a pattern that breaks a maximum run and six channel bits for identifying each sync signal.